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Celestron’s CPC-800 FORKMOUNTED 8" SCT

JRCRILLY 2/28/2006

Celestron’s 8" and 11" Nexstar GPS models have been in use for about 5 years, and are generally considered very capable. I’ve owned three of them myself, and have never hesitated to recommend them to others. More recently a 9.25" version was released with similar market acceptance. Offering typical Celestron optical quality in the form of carbon fiber tube F/10 Schmidt-Cassegrain telescopes on beefy, computerized forkmounts with all the bells and whistles, they were great for field use in altitude/azimuth mode, but also capable in EQ mode with a suitable wedge for imaging types.

Although Meade probably set a record by leaving their original LX200 series in production for ten years with practically no changes after the first couple of years, five years is a pretty long run in high-tech astronomical gear. Celestron has made some obvious changes in introducing this new model, which will replace the popular Nexstar GPS series once all of the versions are in production. The 8" version was released first, and that’s the model I managed to get a good look at. The 11" version has been released as this goes to press, and the 9.25" version is eagerly awaited by some.

MODEL OVERVIEW

The optical tube is Celestron’s standard aluminum tube C8, an 8" F/10 Schmidt-Cassegrain. It is available with either Starbright multicoatings or the upgrade Starbright XLT coatings system. It is supplied on a dual-arm, computerized forkmount and may be operated either in altitude/azimuth mode or in EQ mode with the addition of an optional wedge. The control system is highly automated, with a database in excess of 40,000 objects. Because of the inclusion of the GPS feature and the new SkyAlign firmware this instrument can be successfully aligned with no knowledge of the sky or even of the user’s location. Other alignment modes are also available for those wishing a quicker (but equally precise) setup. Due to the generosity of Cloudy Nights sponsor Astronomics I was able to borrow one of these for review. It arrived in sealed, unopened boxes and I will consider it a random sample.

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SO WHAT DO YOU GET?

The telescope and tripod arrived in two undamaged boxes. Opening the telescope box revealed that Celestron is still using the high-density foam packaging preferred by many of us rather than the molded foam inserts to which Meade has recently switched.

Nestled in the top foam section are the accessories, each packaged separately.

Unpacking the accessories, I found all the expected bits with a few small surprises. Included in the plastic bag with the manual are a CD containing NexRemote and a serial PC cable. There's a handbox holder to locate the handbox more conveniently than in the NexStar GPS series telescopes. The finderscope holder is a new quick-release type that looks very nice. There is also the usual finderscope, 1.25" visual back, 1.25" star diagonal, a DC cord, and a 40mm Plossl.

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Removing the top foam piece revealed the telescope itself, wrapped in plastic and with the single handle conveniently placed at the upper side.

Before removing the telescope from the box it's time to get that tripod set up. The first surprise is that unlike some recently received competing products, Celestron has continued the use of double boxes, protecting the contents very well. Those white boxes visible at the top are there both to contain accessories and to space the contents for shipping. It's an old Tasco trick.

Opening the accessory boxes yields a tripod assembly manual and a new plastic spreader.

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This spreader looks as though it will be a little more difficult to break than the one used with the NexStar GPS tripods. It's more flexible, and is contoured to spread the load across a wider surface.

The new tripod head has some attractive new features. The area around each attachment bolt is relieved so the feet on the telescope base can be easily located and inserted. This guarantees alignment of the attachment bolts. There's a compass built into the tripod head.

The telescope attachment bolts are captive and springloaded, making installation very quick and easy - and protecting against dropped bolts in the dewey grass.

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Here's the tripod ready to go.

Here it is, set up and ready to use. As expected, the locating depressions in the tripod head made orienting the telescope quick and easy, and the captive installation bolts popped right in. The large, comfortable handles on each side mean that this model is another winner in ease of setup.

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Here's the control panel. Note that the slip rings of the NexStar GPS line are gone. This entire panel rotates with the telescope.

The DEC clutch operated by this large, finger-friendly wheel in the fork arm.

The RA (azimuth) clutch is operated by a wheel in the center of the base.

Below you can see detail photos of the upper and lower telescope handles and the forkmounted handbox holder.

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HOW DOES IT WORK?

First light with the CPC-800 was at our Club's public observing site. It's not very dark but is readily accessible to the public because it's within a State Park. Setup was as easy as it had been in the dining room. I didn't use the level in the tripod head but set it up by eyeball. I then powered the telescope by using the supplied DC cable and my usual Jump Start battery pack, being careful to dress the power lead so it wouldn't tangle when while moving along with the telescope base during rotation is azimuth. I aligned the finderscope to the main telescope, turned it on, and selected Sky Align. The controller displayed a message about "GPS linking" so I left on and wandered around for a few minutes. On my return I saw that the same message was displayed. Because it was getting dark (and because there were curious observers wanting a peek at the telescope) I entered the time & location data manually and proceeded to the alignment.

I manually slewed to three anonymous stars in turn but was rewarded with an "alignment failed" message. Trying again with three brighter (and thus known) stars achieved a successful alignment. Following the directions to use three "bright" stars seems to be the key here. Subsequent goto operations yielded the same pleasing accuracy I had come to expect from the NXGPS series telescopes; every object was near center in the eyepiece. Transparency was unusually poor and the Moon was high, so deep sky observing was a little disappointing. On the other hand, the seeing was unusually good, permitting the use of the shortest eyepiece I had with me, the 5-8mm S-W zoom. That gave me 400X at its shortest setting, and at that magnification the CPC did a fine job of displaying the Moon.

The next test was to set the CPC-800 up on my observatory pier. The large base of this model made it impossible to mount it on my Superwedge so I used it in altitude/azimuth mode. The first test was to open the roof, power the telescope up, and give it plenty of time (2 hours) to download the satellite ephemera so the GPS receiver would work properly. Unfortunately, the receiver in this unit was apparently defective, as it never did achieve a lock even though every other GPS-equipped telescope that has been placed there had no problems. Although I knew very well that Celestron would repair it under warranty, delays caused by a long run of bad observing weather had already resulted in my keeping the telescope longer than I had intended so I proceeded to finish my evaluation without the GPS function. The telescope was bolted down anyway, so for my purposes the GPS feature wasn't needed. Once time & location information has been entered either manually or via the GPS receiver the operation of the telescope & controller is precisely the same either way. I made sure that Astronomics was aware of the problem so they could sort it out after it was returned to them.

I proceeded to use the telescope in that fashion for several nights. Alignment was always successful on the first try (I decided not to use the Hibernate feature so I could gain more experience with SkyAlign). Goto accuracy was just as good as on that first

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night in the field every time. The C8 proved to be in excellent collimation and was never adjusted by me. With the exception of the defective GPS receiver the telescope performed as expected in every way. Given the limitations of alt/az operation, I even managed to grab one quick image with it using the Canon 300D, stacking 4 exposures of 30 seconds each. The telescope isn't to blame for the strange color balance; I was using an IR-modified 300D for the first time, and shooting through an Ultrablock filter. I'll have to work at attaining a decent color balance with that setup. I stuck a ZS80FD on top one evening, even though I didn't have a really suitable counterweight setup available, with no ill effects.

CONCLUSIONS

It appears to me that the CPC-800 is a worthy successor to the Nexstar GPS series telescopes. Performance appeared identical to me, both mechanically and optically.

STRONG POINTS
Ergonomics are even better than the Excellent NXGPS
Great Celestron optics
Beefy fork arms and mount
SkyAlign actually works!

WEAKER POINTS
Control panel rotates with the base, meaning that all cables do also
Incompatible with many non-Celestron wedges
Inoperable GPS receiver in the test unit

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NXGPS QUICK COMPARISON

The changes I could see are apparently aimed at maintaining the performance level of the NXGPS telescopes at a slightly lower cost. One nonvisible aspect of this is the new SkyAlign alignment process, which neatly avoids the $100 per instrument licensing fee Celestron has been paying to Meade on the NXGPS telescopes. This new software also permitted the elimination of the magnetic compass and level switches present in the NXGPS scopes. More obvious changes include the switch to aluminum optical tubes from the carbon fiber of the earlier models, and the elimination of the internal slip rings which permitted the power socket to be mounted on an unmoving portion of the base. On the CPC, the power socket rotates with the telescope. The altitude and declination clutch levers have been replaced by large disks which should be much easier to grip with cold or gloved fingers. The new finderscope holder permits removal and reinstallation of the finder without tools and without disturbing its alignment. The tripod still uses a plastic spreader, but this one appears to be less brittle and is designed to spread the load over a larger area so there should be fewer problems with breakage. The three bolts which hold the telescope to the tripod are now captive within the tripod head - and the head has contours added to match the rubber feet on the telescope base so it’s easier to position with the holes properly lined up. A handbox holder is provided rather than a place to park the handbox within the fork arm.

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